Approach

1. Use native plants

2. Develop green vegetated areas along waterways

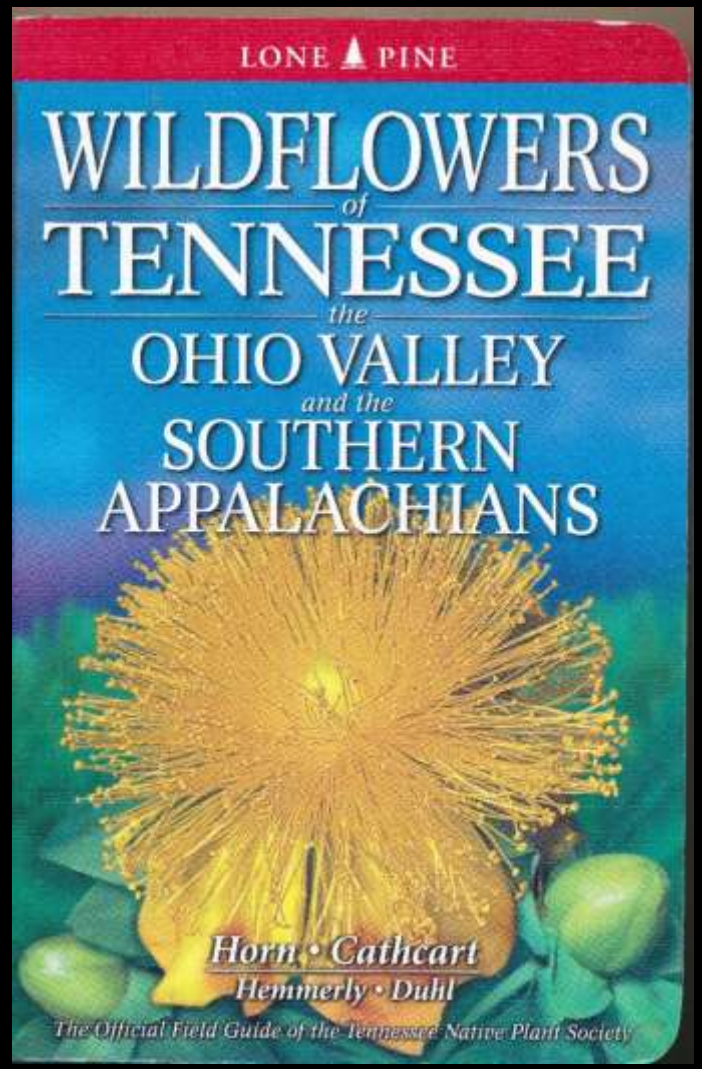
    a. moist - not necessarily always wet drainage ditches
    b. wetlands
    c. lakes
    d. creeks
    e. streams
    f. rivers

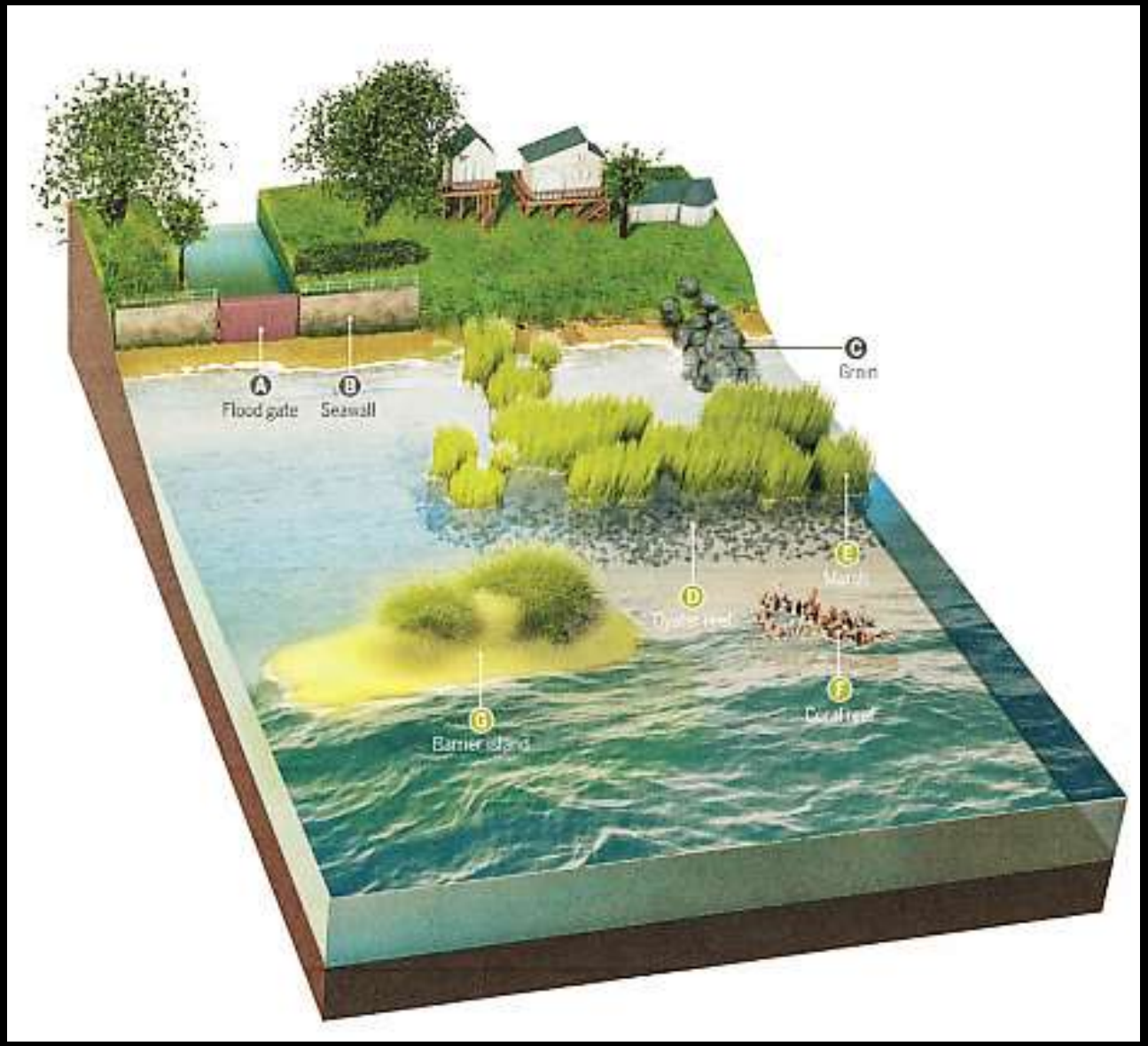
Goals

1. Retard and reduce rainwater runoff
2. Absorb and clear pollutants
3. Promote visual appeal – aesthetics
4. Promote biodiversity – include multiple species
5. Provide cover, habitat, food sources – native aquatic and terrestrial life

Why native plants?

1. Adapted to local environment - hardy
2. Comparatively low maintenance
3. Extensive root system
    a. hold soil – retard runoff
    b. absorb and clear pollutants
4. Key to biodiversity
5. Habitat, cover, food for native animals





Hurricane Irene – 2011 – N. Carolina

Popkin, G. Breaking the waves. Science 350 (350): 756-759, November 13, 2015

Centennial Park – An Example

only turf grass

2010

2011

2018

Common	Scientific	Sun	Part	Shade	Dry	Moist	Wet	Ht
Cherokee Sedge	*Carex cherokeenis*	X	X	X ?		X	X	1-2'
River Oats	*Chasmanthium latifolium*	X	X		X	X	X	3-4'
Switch Grass	*Panicum virgatum*	X				X	X	3-4'
Pink Muhly	*Muhlenbergia capillaris*	X	X			X	X?	3-4'
Indian Grass	*Sorghastrum nutans*	X	X		X	X		4-6'
Big Bluestem	*Andropogon gerardii*	X			X	X		5-7'
Little Bluestem	*Schizachyrium scoparium*	X	X		X			2-4'

Data extracted from much larger table by GroWild, Fairview, TN

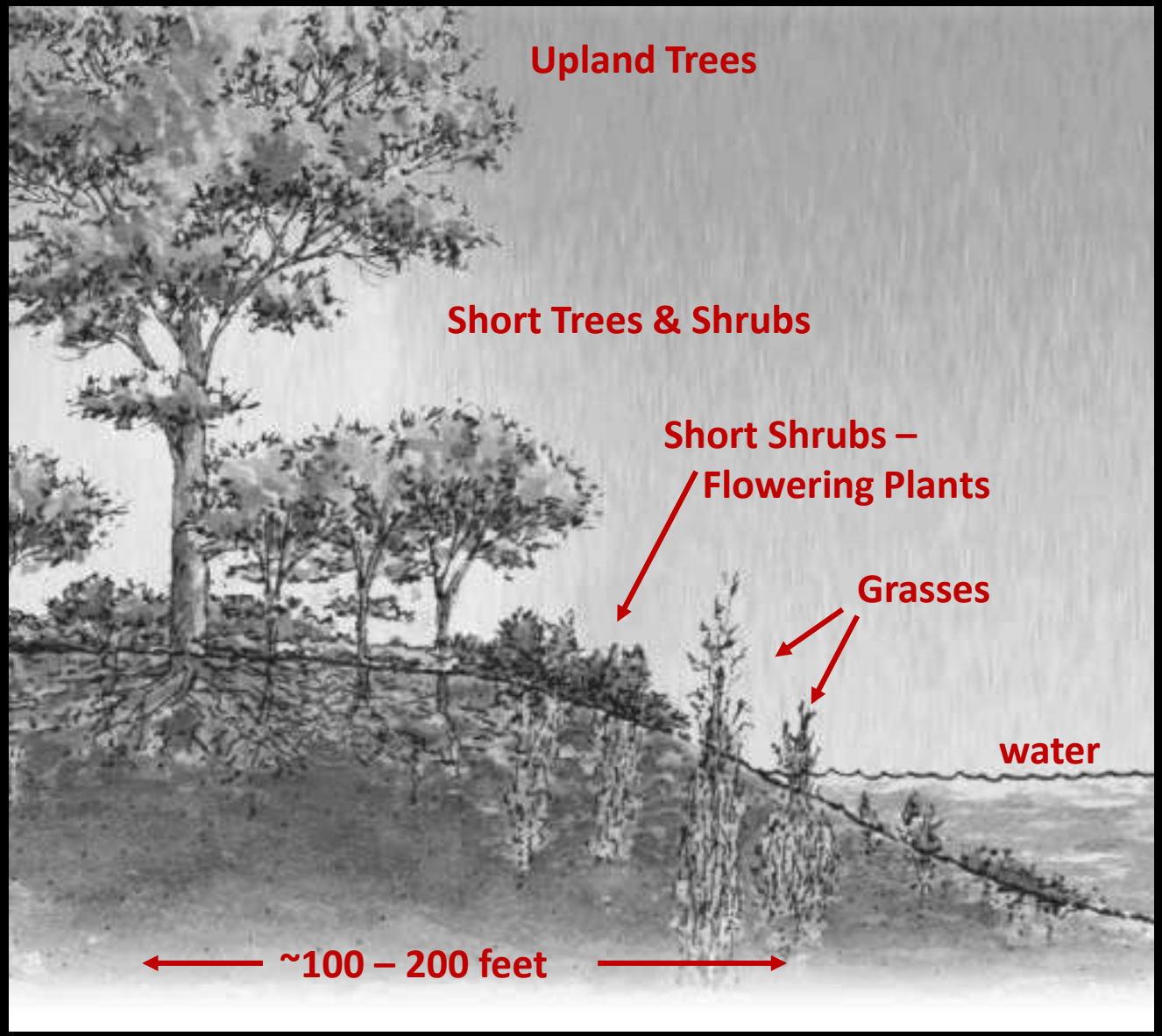
Moist-Wet > Height > Sun-Shade

Part sun – 4-6 hours

Part shade – 2-4 hours sun or shaded at least half the day

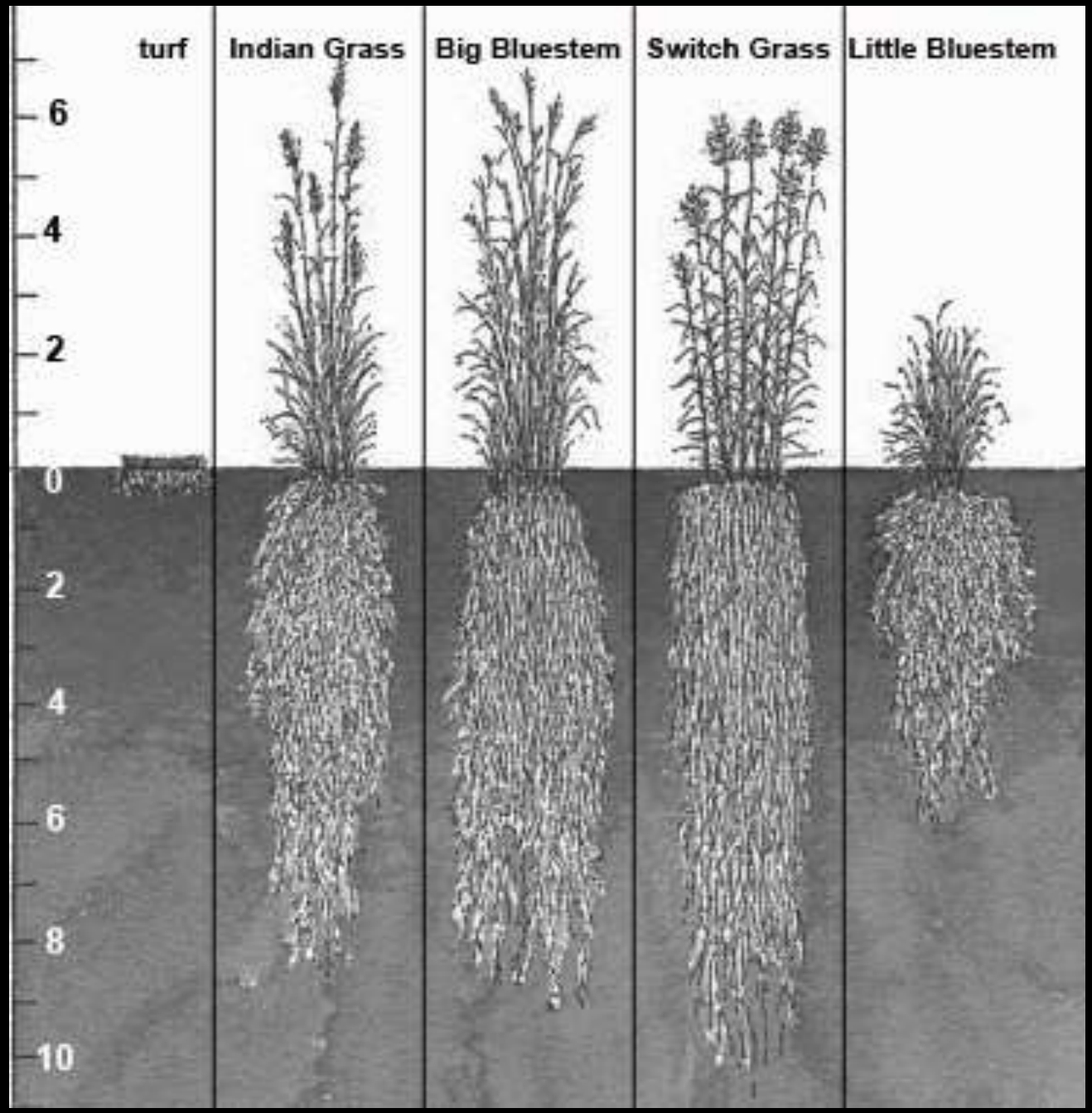
Shade – least than 2 hours of sun

Components of shore-line zone



Native Grasses

1. full sun
2. widely adaptable
3. relatively drought tolerant
   relatively maintenance free



moist- wet
1-2 feet
sun-part-shade

Cherokee Sedge ***Carex cherokeensis***

River Oats

Chasmanthium latifolium

dry-moist-wet
3-4 feet tall
sun-part

give lots of room between plants

Switchgrass

Panicum virgatum

moist-wet
to 8 feet – Shenandoah variety – 3-4 feet
sun

Pink Muhly Grass

Muhlenbergia capillaris

moist-wet?
3-4 feet
sun-part

Indian Grass

Sorghastrum nutans

dry –moist - favored by occasional flooding – lowlands
tolerates imperfectly drained soil
4-6 feet
sun-part

Big Bluestem Turkeyfoot

Andropogon gerardii

dry moist
5-7’
sun

Little Blue Stem

Schizachyrium scoparium

dry
2-4 feet
full sun
best in fertile soil

Native Shrubs

1. erosion control
2. butterfly gardens
3. nectar source
4. nest protection

Silver-spotted Skipper *Epargyreus clarus*

Button Bush

Cephalanthus occidentalis

sun to part shade

stream banks, will grow in standing water

up to 15 feet

Venable, R. 2014, Butterflies of Tennessee

Silky Dogwood

Cornus amomum

moist soils
close to full shade
may look unkempt
berries – food source

Silky Dogwood

Cornus amomum

Elderberry

Sambucus canadensis

but both male and female on same plant
raw berries poisoness

sun-part shade
in sun – may need irrigation
berry clusters August – September

American Beautyberry

Callicarpa americana

bloom in May
moist to boggy soil
remove suckers to control

Black Chokeberry

Aronia melanocarpa

Sweetshrub

Calycanthus floridus

adaptable -prefers moist soils
6-9 feet
fragrant
yellow

full sun
blooms April - June
wet, wooded stream banks
provide water in droughts

Virginia Sweetspire

Itea virginica

Flowering plants

1. nectar source
2. food source for insects, birds
3. habitat cover - small animals

Blue Flag Iris *Iris versicolor*

full to partial sun
wet- rich organic soil (wetlands)
bloom May to July
spreads well

Rose Mallow - Swamp Rose Mallow

Hibiscus moscheutos

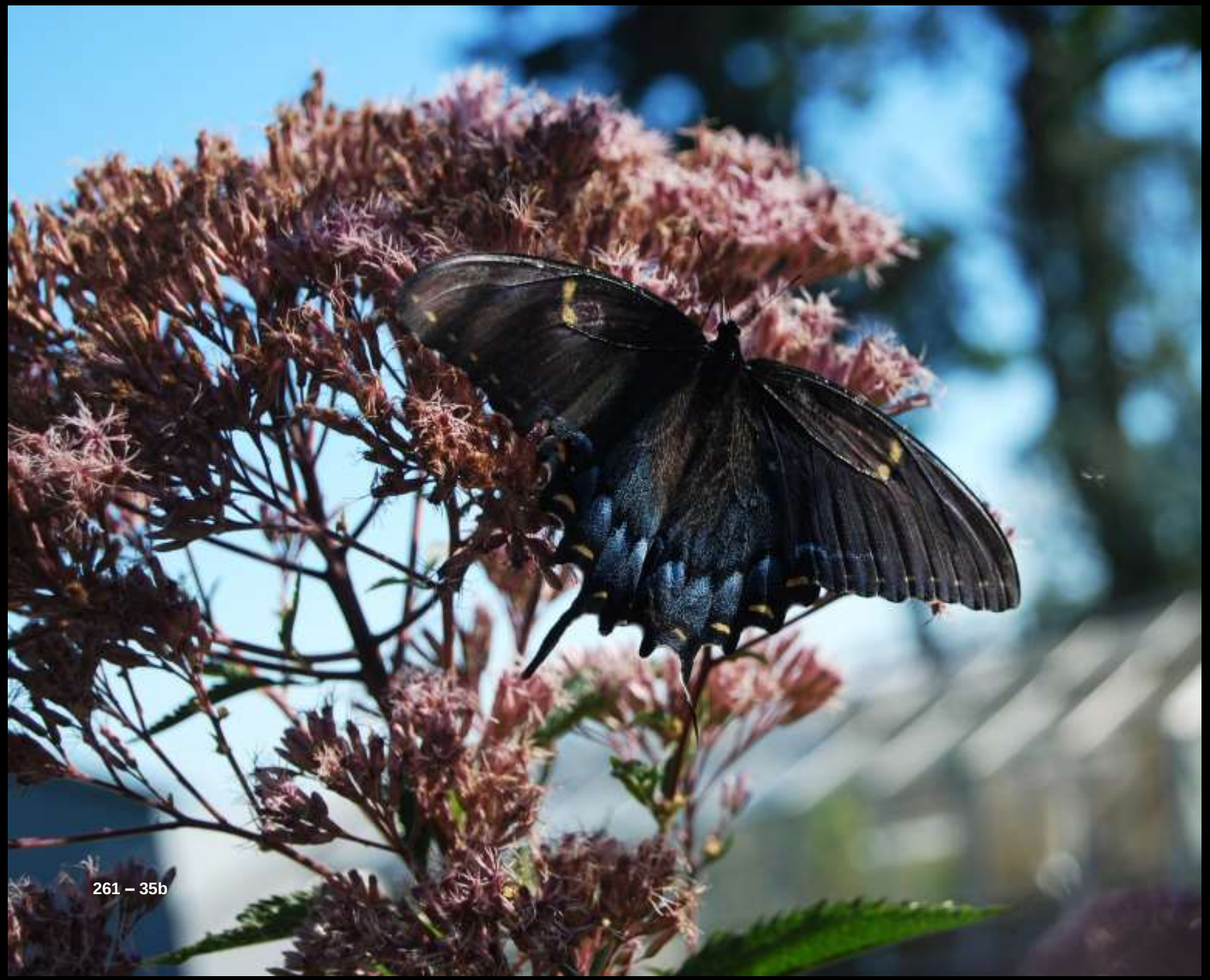
wet lands – shorelines
full sun
up to 7 feet – flowers to 8 inches


269-130b

Joe Pye Weed

Eupatorium maculatum
Eutrochium purpureum

moist conditions
can get tall
good soil – multiple stalks



Venable, R. 2014, Butterflies of Tennessee

Spicebush Swallowtail ***Papilio troilus***

Foxglove-Beardstongue ***Pensternon digitalis***

Foxglove Beardtongue

Pensternon digitalis

not Foxglove plant *Digitalis purpurea*

wetland – stream edge
avoid poorly drained soils
roots stabilize soil
prolific

Swamp Milkweed - Rose Milkweed

Asclepias incarnata

prefers sun
moist soils
late spring - midsummer
monarch food source

Spicebush Swallowtail

Papilio troilus

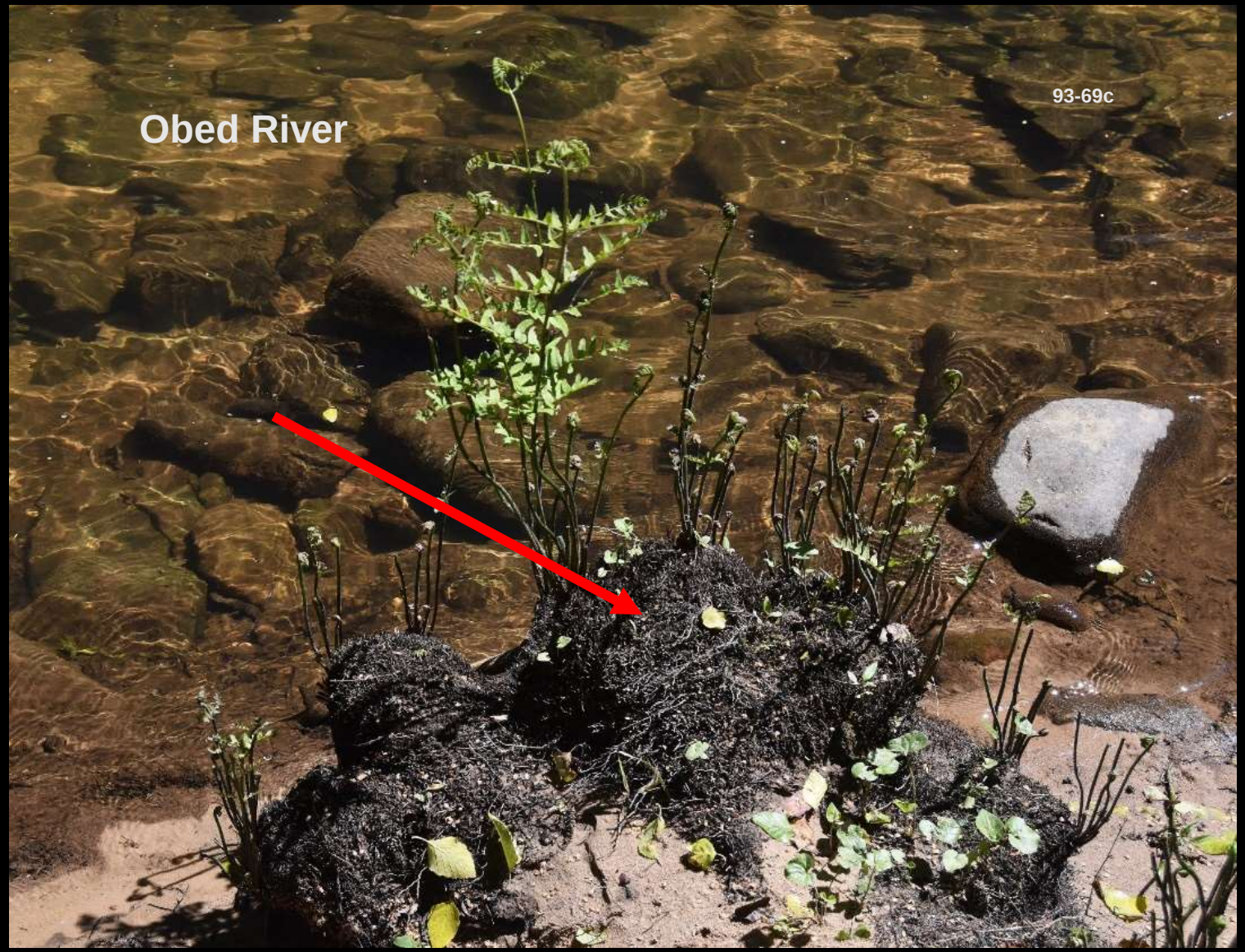
Cut Leaf Coneflower ***Rudbeckia laciniata***

What about cattails?

Ferns

1. alternative or complement to understory flowering plants
2. dense root system – erosion control
3. most require relatively dense shade – indirect light
4. moist fertile soil

Royal Fern ***Osmunda regalis***



Royal Fern ***Osmunda regalis***

Cinnamon Fern

Osmundastrum cinnamomeum

swampy shaded areas
marker of water saturated soil
cinnamon – color sporangia in spring
sterile fronds to 5 feet, 8 inch broad
massive root systems

Genesis Gardens in spring

azale
a

Trees

1. erosion control
2. shade – cool streams
3. indirectly increases oxygen content
4. healthy for fish
5. animal corridor
6. shelter

more than one tree species of tree – encourage biodiversity

American Sycamore
American Plane Tree

Plantanus occidentalis

Crossville Housing Authority

riparian wetlands
exfoliating bark
can become quite large
leaf also large
fruit persists thru
winter

River Birch

Betula nigra

rapid growth – 30 – 40 feet
in 20 year
short lived
do not plant close to house

The End